

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (withdrawn) A method for reducing NO_x in lean exhaust gases to N_2 , the method comprising:
injecting a fuel into the exhaust gases; and
passing the exhaust gases and fuel mixture through a catalyst to reduce the NO_x in the exhaust gases to N_2 .
2. (withdrawn) The method of claim 1, further comprising passing the NO_x reduced exhaust gases through a partial oxidation catalyst.
3. (withdrawn) The method of claim 1, wherein the fuel is selected from the group consisting of diesel fuel and gasoline.
4. (withdrawn) The method of claim 1, wherein the catalyst comprises a perovskite compound represented by the formula $\text{AB}_{1-x}\text{PM}_x\text{O}_3$, where A is a rare-earth metal, B is a transition metal, PM is a precious metal, and O is oxygen.
5. (withdrawn) The method claim 4, wherein A comprises lanthanum, B comprises manganese, PM comprises ruthenium, and x ranges from about 0.01 to 0.3.
6. (withdrawn) The method of claim 1, wherein the catalyst comprises at least one metal oxide impregnated with at least one precious metal.
7. (withdrawn) The method of claim 6, wherein the metal oxide comprises one selected from the group consisting of TiO_{2-x} and Al_2O_3 .
8. (withdrawn) The method of claim 7, wherein x is 0.25.
9. (withdrawn) The method of claim 6, wherein the precious metal is selected from the group consisting of Pt, Pd, Rh, Ru, Ir, and combinations thereof.

10. (withdrawn) The method of claim 1, wherein the catalyst comprises a zeolite impregnated with at least one precious metal.

11. (withdrawn) The method of claim 10, wherein the zeolite comprises one selected from the group consisting of MCM-41, ultrastabilized Y, NaY, H-ferrierite, $\text{AlPO}_4\text{-5}$, and ZSM-5.

12. (withdrawn) The method of claim 8, wherein the zeolite is loaded with a metal selected from the group consisting of Cu, Ni, In, Ga, Ag, Co, and combinations thereof.

13. (withdrawn) The method of claim 1, wherein the catalyst comprises a combination of a zeolite and at least one metal oxide impregnated with at least one precious metal.

14. (withdrawn) The method of claim 13, wherein the metal oxide comprises Al_2O_3 .

15. (withdrawn) The method of claim 13, wherein the precious metal comprises one selected from the group consisting of Pt, Pd, Rh, Ru, Ir, and combinations thereof.

16. (withdrawn) The method of claim 13, wherein the zeolite comprises one selected from the group consisting of MCM-41, ultrastabilized Y, NaY, H-ferrierite, $\text{AlPO}_4\text{-5}$, and ZSM-5.

17. (Currently amended) ~~An~~ A reductant injection system for reducing exhaust gas NO_x reducing system in lean-burn engines, comprising:

a catalytic reactor having an inlet end which receives ~~the~~ exhaust gases containing NO_x and, an outlet end which outputs converted exhaust gases, and a port;

a ~~catalyzed substrate~~ catalyst mounted inside the catalytic reactor for reducing NO_x in the received exhaust gases to N_2 in the presence of a fuel, wherein the catalyst is positioned downstream of the port in catalytic reactor; and

a fuel injector coupled to the port in the catalytic reactor and being positioned upstream of the catalyst for, wherein the fuel injector ~~injecting~~ injects the fuel in the exhaust gas upstream of the catalyzed substrate prior to the exhaust gas passing through the catalyst, wherein the fuel is used as a reductant.

18. (Currently amended) The system of claim 17, further comprising a partial oxidation catalyst mounted downstream of the ~~eatalyzed-substrate~~catalyst.
19. (Original) The system of claim 17, wherein the fuel comprises one selected from a group consisting of diesel fuel and gasoline.
20. (Original) The system of claim 17, wherein the catalyst comprises a perovskite compound represented by the formula $AB_{1-x}PM_xO_3$, where A is a rare-earth metal, B is a transition metal, PM is a precious metal, and O is oxygen.
21. (Original) The system of claim 20, wherein A comprises lanthanum, B comprises manganese, PM comprises ruthenium, and x ranges from about 0.01 to 0.3.
- 22.-32. (cancelled)
33. (withdrawn) A catalyst composition for reducing NO_x in lean exhaust gases to N_2 using a fuel as a reductant, comprising a perovskite compound represented by the formula $AB_{1-x}PM_xO_3$, where A is a rare-earth metal, B is a transition metal, PM is a precious metal, and O is oxygen.
34. (withdrawn) The catalyst composition of claim 33, wherein x ranges from about 0.01 to 0.3.
35. (withdrawn) The catalyst composition of claim 33, wherein A comprises lanthanum.
36. (withdrawn) The catalyst composition of claim 33, wherein B comprises manganese.
37. (withdrawn) The catalyst composition of claim 33, wherein PM comprises platinum.
38. (withdrawn) The catalyst composition of claim 33, wherein A comprises lanthanum, B comprises manganese, PM comprises platinum, and x ranges from about 0.01 to 0.3.

39. (withdrawn) A catalyst composition for reducing NO_x in lean exhaust gases to N₂ using a fuel as the reductant, comprising at least one metal oxide impregnated with at least one precious metal.
40. (withdrawn) The catalyst composition of claim 39, wherein the metal oxide comprises TiO_{2-x}.
41. (withdrawn) The catalyst composition of claim 39, wherein the precious metal comprises one selected from the group consisting of Rh, Pt, Pd, Ir, Ru, and combinations thereof.
42. (withdrawn) A catalyst composition for reducing NO_x in lean exhaust gases to N₂ using a fuel as a reductant, comprising a zeolite impregnated with at least one precious metal.
43. (withdrawn) The catalyst composition of claim 42, wherein the zeolite comprises one selected from the group consisting of MCM-41, ultrastabilized Y, NaY, AlPO₄-5, H-ferrierite, and ZSM-5.
44. (withdrawn) The catalyst composition of claim 42, wherein the zeolite is loaded with a metal selected from the group consisting of Cu, Ni, In, Ga, Ag, Co, and combinations thereof.
45. (withdrawn) The catalyst composition of claim 42, wherein the precious metal comprises one selected from the group consisting of Pt, Pd, Rh, Ru, Ir, and combinations thereof.
46. (withdrawn) A catalyst composition for reducing NO_x in lean exhaust gases to N₂ using a fuel as a reductant, comprising a combination of a zeolite and at least one metal oxide impregnated with at least one precious metal.
47. (withdrawn) The catalytic composition of claim 46, wherein the zeolite comprises one selected from the group consisting of MCM-41, ultrastabilized Y, NaY, H-ferrierite, AlPO₄-5, and ZSM-5.

48. (withdrawn) The catalytic composition of claim 47, wherein the precious metal comprises one selected from the group consisting of Pt, Pd, Rh, Ru, Ir, and combinations thereof.

49. (withdrawn) The catalytic composition of claim 47, wherein the metal oxide comprises Al_2O_3 .

50. (withdrawn) A catalytic unit for reducing NO_x in lean exhaust gases to N_2 using a fuel as a reductant, comprising a body extruded from a zeolite which is impregnated with at least one precious metal.

51. (withdrawn) The catalyst unit of claim 50, wherein the zeolite comprises one selected from the group consisting of MCM-41, ultrastabilized Y, NaY, H-ferrierite, $\text{AlPO}_4\text{-5}$, and ZSM-5.

52. (withdrawn) The catalyst unit of claim 50, wherein the zeolite is loaded with a metal selected from the group consisting of Cu, Ni, In, Ga, Ag, Co, and combinations thereof.

53. (withdrawn) The catalytic unit of claim 50, wherein the precious metal comprises one selected from the group consisting of Pt, Pd, Rh, Ru, Ir, and combinations thereof.

54. (withdrawn) A catalytic unit for reducing NO_x in exhaust gases to N_2 using a fuel as a reductant, comprising a ceramic substrate coated with at least one metal oxide impregnated with at least one precious metal.

55. (withdrawn) The catalytic unit of claim 54, wherein the metal oxide comprises TiO_{2-x} .

56. (withdrawn) The catalytic unit of claim 54, wherein the precious metal comprises one selected from the group consisting of Pt, Pd, Rh, Ru, Ir, and combinations thereof.

57. (withdrawn) A catalytic unit for reducing NO_x in exhaust gases to N_2 using a fuel as a reductant, comprising a ceramic substrate coated with a perovskite compound represented by

the formula $AB_{1-x}PM_xO_3$, where A is a rare-earth metal, B is a transition metal, PM is a precious metal, and O is oxygen.

58. (withdrawn) The catalyst unit of claim 57, wherein A comprises lanthanum, B comprises manganese, PM comprises platinum, and x ranges from about 0.01 to 0.3.

59. (withdrawn) A catalytic unit for reducing NO_x in exhaust gases to N_2 using a fuel as a reductant, comprising a ceramic substrate coated with a combination of a zeolite and at least one metal oxide impregnated with at least one precious metal.

60. (withdrawn) The catalytic unit of claim 59, wherein the zeolite comprises one selected from the group consisting of consisting of MCM-41, ultrastabilized Y, NaY, H-ferrierite, $AlPO_4-5$, and ZSM-5.

61. (withdrawn) The catalytic unit of claim 59, wherein the precious metal comprises one selected from the group consisting of Pt, Pd, Rh, Ru, Ir, and combinations thereof.

62. (withdrawn) The catalytic unit of claim 59, wherein the metal oxide comprises Al_2O_3 .